

Application No. 10/659,748
Attorney Docket No. 031140

Amendment under 37 C.F.R. §1.116
Amendment filed August 12, 2008

AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all prior versions of claims in the application.

1. (Currently Amended) A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulation film by oxidizing a surface of a semiconductor substrate using a strongly acidic solution after cleaning the surface of said semiconductor substrate; and

by performing a processing for the formation of a film of the same material as said first insulation film at low-temperature by plasma processing with a radial line slot antenna through microwave excitation, forming a second insulation film of the same material as said first insulation film so that said second insulation film embraces said first insulation film,

wherein a SONOS transistor is constituted by sequentially forming a first oxide film, a nitride film, a second oxide film and a semiconductor film on the semiconductor substrate, and said second insulation film is formed to serve as the first oxide film.

2. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said second insulation film is formed in an atmosphere containing a radical.

3. (Original) The manufacturing method of the semiconductor device according to claim 1, wherein said second insulation film is formed by plasma oxidation in an atmosphere containing an oxide radical.

4-5. (Canceled)

6. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said strongly acidic solution is a solution containing nitric acid.

7. (Previously Presented) The method of manufacturing the semiconductor device according to claim 6, wherein said solution containing the nitric acid is 70 °C or higher in temperature.

8. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said strongly acidic solution is a solution containing ozone.

9. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said low-temperature processing is conducted at a temperature of 650 °C or lower.

10. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said first insulation film has a film thickness of 1 nm or more.

11. (Original) The method of manufacturing the semiconductor device according to claim 1, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

12. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said strongly acidic solution is a solution containing nitric acid.

13. (Original) The method of manufacturing the semiconductor device according to claim 3, wherein said strongly acidic solution is a solution containing nitric acid.

14. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said strongly acidic solution is a solution containing ozone.

15. (Original) The method of manufacturing the semiconductor device according to claim 3, wherein said strongly acidic solution is a solution containing ozone.

16. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said low-temperature processing is conducted at a temperature of 650 °C or lower.

17. (Original) The method of manufacturing the semiconductor device according to claim 2, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

18. (Original) The method of manufacturing the semiconductor device according to claim 3, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

19. (Previously Presented) The method of manufacturing the semiconductor device according to claim 1, further comprising the step of:

after said first isolation is formed, leaving said first isolation film as it is for a fixed time,
wherein said second isolation film is formed after said first isolation film is left as it is for the fixed time.

20. (New) The method of manufacturing the semiconductor device according to claim 1, said SONOS transistor is an embedded-bit-line-type transistor.